

## LITERATURE CITED

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ZOOLOGY.—*New millipeds of the western States and Lower California*. H. F. LOOMIS, Coconut Grove, Fla.

For many years past there has been accumulating a number of interesting but undescribed millipeds in the writer's collection. These have not lent themselves to inclusion in systematic treatment of groups that have been prepared recently or are contemplated. Several of the species exhibit characters that affect the present concepts of the family or genus to which they belong and consequently are especially noteworthy. Types of species here described are deposited in the U. S. National Museum.

*Cambala caeca*, n. sp.

One broken male (type) from "inner area of bat cave," Wyatt Cave, and 12 females from Felton Cave taken "in association with bat guano" by O. G. Babcock, Sonora, Tex., 1922-23. U.S.N.M. no. 2087.

*Diagnosis*.—Although departing in several particulars, such as lack of eyes, the anterior segments forming a necklike constriction, and the presence of claws on the first male legs, from the characters associated with the genus, the gonopods are so definitely typical of *Cambala* as to require inclusion of the species there and cause modification of the generic concept involving the above characters.

*Description*.—Length 22 to 25 mm. Number of segments of females 46 to 48, male type with 54.

Head without eyes, smooth, the clypeus with 6 to 8 setae, the labrum with 12 to 14 setae; antennae with joint 2 longest, joint 6 broadest and next in length.

First segment as long as the next three together, anterior angle broadly rounded and flaring outward somewhat from the side of the head; posterior angle slightly produced backward; surface of segment smooth but with a fine raised rim along the lateral margin. Fig. 1.

Segments 2 and 3 with sides converging backward to form a noticeable necklike constriction; segment 2 entirely smooth above with segment 3 usually so, but infrequently dorsal crests are faintly evident near the back margin.

From segment 4 to the penultimate segment inclusive there are four strong, smooth, dorsal crests between the poriferous ones, the latter having the posterior half of the same thickness as the dorsal crests but the anterior half is two or three times as broad, slightly more elevated, and with the pore in the center. Sides of segments striate but the surface just below the upper stria elevated to form a noticeable ridge; prozonites crossed lengthwise by numerous thin, low, beaded ridges.

Last segment smooth, as long as the two preceding segments together.

Anal valves smooth, meeting in a groove. Pre-anal scale broad, slightly thickened and emarginate at middle and with an erect seta on either side; tab processes large, each with a single seta.

Gonopods as shown in Figs. 2 and 3.

First male legs 6-jointed, the first and second joints short but twice the width of the following joint; last joint not modified and with a normal claw. Legs 6 and 7 with joints 4 and 5 enlarged, the former with a large rounded lobe ventrally.

*Remarks*.—In Ent. News **63**: 10-11. 1952. Chamberlin described a new genus and species of cambalid from the same two caves and taken by the same collector as were the specimens above referred to the genus *Cambala*. In comparing the specimens before me with Chamberlin's generic and specific descriptions of *Eclomus (Eclytus) speobius* one is struck by the numerous points of similarity of the two species. *E. speobius*, however, is said to have dorsal carinae somewhat developed on segment 2 and on the succeeding segments "sharply elevated and complete", whereas specimens of *C. caeca* show segment 2 with no semblance of dorsal carinae and in only a few specimens do they appear as faint elevations near the posterior border of segment 3.

In other particulars the similarity is remarkably close but *E. speobius* is credited with but 41-43 segments whereas mature specimens of the present species have 46-54. Since no male characters whatever were mentioned for *E. speobius* it

may be inferred that the genus was founded on females, immature specimens or both. With the numerous specimens in both collections coming from the same very restricted locations it is most remarkable that in neither were both species represented. Should it be shown at a later date that but a single species is involved the rules of priority would require that *Eclomus* be placed as a synonym of *Cambala* and *caeca* would then become a synonym of *speobia*.

**Orthoporus arizonicus, n. sp.**

Two males, 1 the type, and a female collected at Patagonia, Ariz., in July 1949, by R. H. Peebles and sent to me alive. U.S.N.M. no. 2088.

*Diagnosis.* Closely related to *punctiliger* Chamberlin as indicated by the gonopods but the size is smaller, and more slender; the sculpturing of the segments, anal valves and preanal scale is simply punctate without rugae; and the first segment has but two lateral striae.

*Description.*—Length 85 to 88 mm, diameter 5 to 6 mm, number of segments 63 to 65. Living color cinnamon brown, with the posterior margin of the segments narrowly darker, legs and antennae also cinnamon brown.

Head with finely impressed sulcus on vertex; front coarsely, longitudinally rugose-punctate below but lessening above; clypeal fovea 13 or 14; eyes separated by over one and a half times the length of an eye, composed of 53 to 56 ocelli in 7 transverse rows.

First segment (Fig. 4) with two prominent lateral striae only; anterior corner somewhat produced in the male.

All segments, as well as the anal valves and preanal scale, very finely punctate and without any impressed lines or rugosity; transverse sulcus strongly evident throughout, bowed forward around the pore which is a third of the way to the posterior margin; last segment rather acute at tip, considerably exceeded by the anal valves.

Gonopods as shown in Fig. 5.

**Hiltonius palmaris, n. sp.**

Two males, 1 the type, and a female collected by the writer in Palm Canyon, Palm Springs, Calif., December 4, 1919. U.S.N.M. no. 2089.

*Diagnosis.*—Apparently most closely related to *H. minus* Chamberlin but with distinct differences in all parts of the gonopods and in the much larger coxal lobes of the third male legs.

*Description.*—Length of body 35 to 50 mm,

width 4.3 to 6 mm; number of segments 48 to 49.

Head with frontal groove strong and wide, that of the vertex not so pronounced; eyes subtriangular, composed of 25 to 30 ocelli in 6 longitudinal rows; clypeal fovea 4 to 5 on each side.

Sides of the first, second and third segments as shown in Fig. 6; the anterior margining rim of segment 1 broad; following segments with a fine median sulcus and a sharply marked transverse constriction on either side of which the surface is faintly convex; pore in front of the constriction but not touching it; midbelt with lateral sulcus faint or absent but that of the hindbelt broad and deep in front, diminishing caudally.

Last segment sharply rounded, in one specimen distinctly angulate; transverse impression faint. Anal valves quite evenly inflated, not more conspicuously so near the margins which meet in a shallow groove; surface punctate and with irregular wrinkles near the opening. Preanal scale broadly rounded and with longitudinal striations, more distinct near the hind margin.

Gonopods as shown in Figs. 7 and 8.

Coxae of third male legs as shown in Fig. 9.

**Arinolus latus, n. sp.**

A number of specimens, including the male type, were collected from beneath stumps of *Yucca arborescens* in Antelope Valley between Lancaster and Palmdale, Calif., January 8, 1928, by O. F. Cook. U.S.N.M. no. 2090.

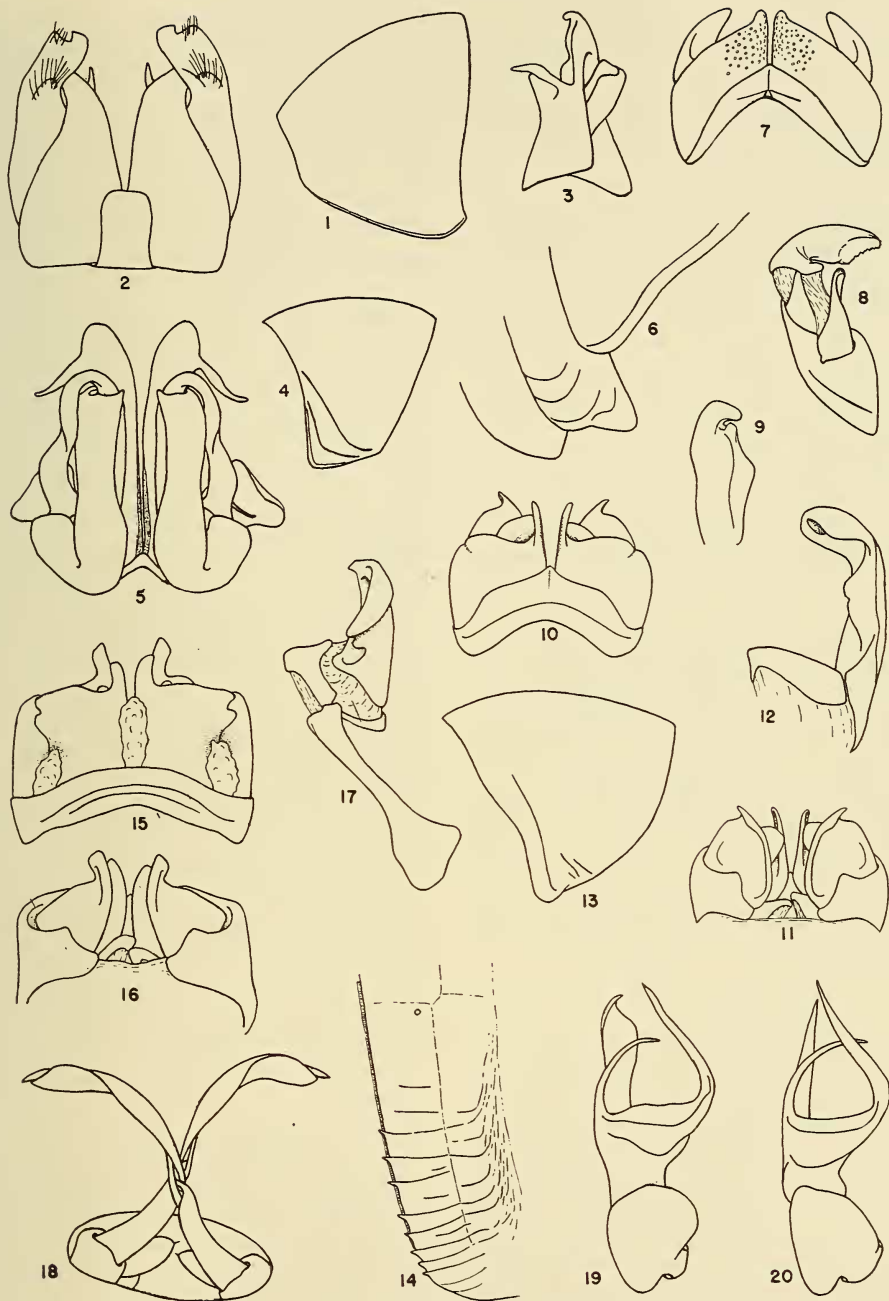
*Diagnosis.*—Distinguished from the other species by the gonopods, particularly the inner ones, and also by the stout body, thickened posterior margins of the segments, very broadly rounded last segment, and the living color.

*Description.*—Body very stout and abruptly constricted at the ends; 29 to 35 mm long and 3.5 to 4 mm thick, the females stouter than the males; segments 42 to 44.

Living colors very strongly shining black with the hindbelt almost golden yellow, semi-translucent. In alcohol the hindbelt changes to dull yellow.

Head with a deep median sulcus on the vertex, the surface of which is slightly rugose in contrast to the shining surface elsewhere; clypeus with 5 or 6 punctations each side; eyes inconspicuous, composed of about 24 to 26 low ocelli in 6 rows forming a rounded patch.

First segment with the margin from behind the eye to the lateral angle strongly raised, the angle a little more acute than in *torynophor* Chamb.



FIGS. 1-20.—1, *Cambala caeca*, n. sp., lateral view of first segment; 2, the same, anterior view of gonopods; 3, the same, lateral view of posterior gonopods; 4, *Orthoporus arizonicus*, n. sp., lateral view of first segment; 5, the same, anterior view of gonopods; 6, *Hiltonius palmaris*, n. sp., lateral view of segments 1, 2 and 3; 7, the same, anterior view of gonopods; 8, the same, lateral view of gonopods with inner gonopod extended; 9, the same, coxae of third male leg; 10, 11, *Arinolus latus*, n. sp., anterior and posterior views respectively of gonopods; 12, the same, anterior view of inner gonopod; 13, *Scobinomus serratus*, n. sp., lateral view of first segment; 14, the same, lateral view of lower side of mid- and hindbelt of segment 21; 15, 16, the same, anterior and posterior views respectively of gonopods; 17, the same, inner gonopod; 18, *Chipus unicus*, n. sp., posterior or ventral view of gonopods which are foreshortened in this aspect; 19, *Motyxia expansa*, n. sp., right gonopod; 20, *Motyxia exilis*, n. sp., right gonopod.



and decidedly more so than in *hospes* (Cook) and usually containing one or two rudimentary striae.

Segments with the transverse constriction shallow but evident, the pore located behind it; in lateral view the surface of the segments behind the constrictions is flatter than in the other species but the hind margins are decidedly thicker; lateral sutures usually not visible but occasionally faintly evident behind the pore on segments near the posterior end of the body; median sulcus visible on the posterior third of all segments from the first to the last inclusive, on the latter forming a conspicuous furrow on the apical portion; surface of fore and midbelts as in *torynophor*, the hindbelt punctate but less noticeably striate, except along the thickened hind margin.

Posterior end of body very abruptly constricted, the segments immediately preceding the last strongly telescoped. Last segment short, margin very much thickened, apex subtruncate, very much more broadly rounded than in the other species. Anal valves almost vertical and visible from above, much less inflated than in the other species, and with the margins meeting in a shallow groove. Preanal scale broadly truncate at the apex, the lateral margins noticeably emarginate.

Gonopods as shown in Figs. 10 to 12.

Segment 6 of the males conspicuously wider and longer than the adjacent segments and also wider than segment 1.

Males with coxae of legs 3 and 4 less produced than are those of 5, 6, or 7, which are much as in *hospes* but thicker.

#### **Scobinomus**, n. gen.

Genotype: *Scobinomus serratus*, n. sp.

*Diagnosis*.—Scobinae have been associated with many of the tropical rhinoericids but with none of the North American *Atopetholidae*. The presence of scobinae, though rudimentary, and emargination of the segments above them, in this genus indicate a distinct gap between it and all other known genera of the family. The gonopods bear some resemblance to those of *Tarascolus* Chamb. but the anteriorly exposed coxal joints of the posterior lobes and differently shaped inner gonopods are distinctive characters in addition to the external ones.

*Description*.—Body rather small and slender, from 10 to 12 times as long as broad; subclavate, the first four or five segments broader than the others.

First segment with the lateral angles nar-

rowed and flaring away from the body, forming its widest part, and distinctly visible from above.

Second segment slightly narrower than the first segment and without an anterior ventral production. Segments 3, 4, and 5 gradually narrowing, after which the segments remain of uniform width to the posterior end of the body except that in the males segment 6 is expanded and nearly as wide as segment 2.

Midbody segments with a strong constriction through the midbelt, the surface behind it conspicuously convex; pore located nearly half way between the constriction and the back margin, immediately behind the suture separating the mid- and hindbelt, thus placing the pore in the latter. Scobinae present, represented by transversely striate areas usually apparent as far forward as segment 6; segments in the scobinate region of the body with the posterior border emarginate adjacent to each scobina of the ensuing segment. Ventral striations reaching about half way to the pore, the marginal angle below each striation carried back into a slender, acute tooth.

Last segment of normal length, the apex broadly rounded and not carried beyond the strongly convex anal valves.

Gonopods with ventral plate short, transverse, not produced at middle; coxal joints of posterior lobes extensively exposed on either side in front; inner gonopods with apical joint short and stout.

Legs long and slender, surpassing the sides of the body. Males with the first two pairs enlarged, the claws double the thickness and length of those on the other legs; coxae of third legs greatly elevated and with the apex bent backward; coxae of ensuing pregenital legs somewhat elevated but not reflexed.

#### **Scobinomus serratus**, n. sp.

Male type and three other specimens from 14 miles north of Ensenada, Lower California, January 7, 1925, and three specimens from Ceregas Canyon, 8 to 10 miles from Ensenada, January 5, 1925; collected by O. F. Cook. U.S.N.M. no. 2091.

*Description*.—Length 30 to 35 mm, width 2.5 to 2.8 mm; number of segments 42 to 46; males more slender than females.

Head with antennae quite slender, joint 2 slightly longest, joints 3 and 6 subequal and next in length, joint 1 slightly longer than joint 7; ocelli 30 to 33 in six series forming a circular

cluster; median furrow very faint on the vertex but strongly impressed on the clypeus.

First segment (Fig. 13) emarginate below the eye and with a broad thickened rim; lateral angles narrowly produced downward and flaring outward from the body and forming its widest part, the angles visible from above; surface of the angulation, behind the anterior rim, with 2 to 5 short striae reaching forward from the posterior margin.

Body not shining but with a dull sheen caused by minute reticulation of the entire dorsal surface; in addition there are a few fine punctations more apparent on the anterior end of the body and on the last segment; forebelt of all segments finely transversely striate; midbelt containing a broad transverse constriction that is lacking on the posterior segments; pore located in the anterior portion of the hindbelt which is strongly convex on constricted segments; scobinae, represented by large, triangular, transversely striate areas, as broad as long and lacking an anterior pit, are present from segment 6 or 7 to just beyond the middle of the body, the posterior margin of the segments in the scobinate region emarginate above each scobina of the succeeding segment; ventral striations reaching only halfway to the pores, the posterior marginal angle below each stria produced as a rather long slender tooth, these teeth present on all but four or five segments at each end of body (Fig. 14).

Penultimate segment almost entirely telescoped within the preceding segment, the last segment not telescoped, the apex produced and very broadly rounded but not exceeding the strongly convex anal valves which meet in a deep groove.

Gonopods as shown in Figs. 15 and 16, with a large soft, and fleshy mass above the middle of the ventral plate between the anterior lobes and with a similar fleshy mass on either side at the basal junction of the anterior lobe and the coxal joint of the posterior lobe. Anterior lobes subquadrate, strongly produced at the inner distal corner, each lobe enclosed on the outer side by the conspicuous coxal joint of the posterior lobe, outer joint of the latter rather small, subtriangular, with the apex produced. Inner gonopods as in Fig. 17, the outer joint short, stout, and excavated on the inner side.

#### *Chipus*, n. gen.

Genotype: *Chipus unicus*, n. sp.

*Diagnosis*.—Immediately distinguished from

all other members of the family Chelodesmidae by the curious elongated and crossed gonopods which clasp the sides of the body.

*Description*.—Body strongly convex with lateral carinae more strongly projecting in the male; posterior angles rounded-obtuse, not produced backward except on two or three segments preceding the last; carinae of segment 19 greatly reduced in size and thickness and with the slightly produced posterior angles small and acute. Segment 1 with distinct raised margin on the sides in front.

Gonopods unique in that the principal or posterior divisions are long, slender, two-parted and crossing each other, curving forward and upward between legs 5 and 6 and extending halfway up the sides of the body to the lateral carinae.

Coxae of third male legs each with a hispid, tumid prominence on the ventral face.

#### *Chipus unicus*, n. sp.

A male (type) and female collected by A. Gibson, July 20, 1949, in forest of western white pine, western fir, larch, cedar, and hemlock on west fork of Emerald Creek, St. Joe National Forest, Idaho. U.S.N.M. no. 2092.

*Description*.—Length 30 mm, width 5 mm; both sexes strongly convex, the female much more so.

Head with a deep furrow on the vertex extending downward to between the antennae; labrum and clypeus each with a fringe of close spaced setae, those of the clypeus much the longest; side of head above the clypeal fringe with 6 to 8 widely separated setae, a pair between the antennae and a more widely spaced pair on the vertex; antennae slender, not as long as width of the body and with joints 2-6 inclusive subequal in width and length.

First segment with a rather thick, raised margin extending from just below the antennae to the lateral angle on each side.

Lateral carinae of male projecting outward nearly twice as far as those of female; margins of carinae thickened, posterior angles rounded-obtuse and not produced backward except very slightly on segments 17 and 18, the carinae of segment 19 greatly reduced in size, thin, and with the posterior corner on each side small, acute and definitely produced behind the median margin. Pores opening outward from the customary segments.

Gonopods (Fig. 18) with the posterior divi-

sions very long and slender, crossing each other and passing up the sides of the body, between legs 5 and 6, half way to the lateral carinae; outer portion of each division composed of two slender subequal closely applied pieces; anterior division of gonopods small, conical and not projecting beyond the opening in the segment; the margin of the opening through which the gonopods project thinly raised, highest on the sides.

Coxae of third male legs each with a rounded, hispid lobe on the ventral face.

*Motyxia expansa*, n. sp.

One male (type) and two females collected at "The Grapevine" below Fort Tejon, Calif., February 28, 1929, by O. F. Cook. U.S.N.M. no. 2093.

*Diagnosis*.—Differing from Chamberlin's *tejana* and *monica* in minor details of the gonopods, and from the latter, at least, in the more restricted carinae of segments 18 and 19.

*Description*.—Male 25 mm long and 4.5 mm wide, the largest female 27 mm long and 5 mm wide; male almost as convex as females.

Living color in general light salmon which is most intense on the lateral carinae and along the posterior half of the segments; head, antennae, legs and ventral surface uncolored.

Segments 2, 3 and 4 of typical shape but segments 17, 18 and 19 with lateral carinae much less produced than those of *monica*, segment 19 being almost completely hidden within 18 and its posterior angles small, inconspicuous and very widely separated.

Gonopods as shown in Fig. 19, rising from a transversely oval opening having a thick raised rim behind.

Third male legs each with a rounded coxal lobe, higher than broad, at the inner angle; sternum between fourth legs with a pair of broad, low, rounded elevations.

*Remarks*.—It is obvious that *expansa*, *tejana*

and *monica* are very closely related, but if details of the authors' drawings of the gonopods of these species are compared, it will be seen that specific differences exist. Following the description of *tejana* (Proc. Acad. Nat. Sci. Phila., 99: 25, 1947) Chamberlin listed the other species in the genus but overlooked *monica*. Having done so, it is probable that he did not compare *tejana* with its closest known relative, but he did compare it with the more distantly related *kerna*.

*Motyxia exilis*, n. sp.

Several males, one the type, and several females collected at Woodford, near Tehachapi, Calif., January 8, 1928, by O. F. Cook. U.S.N.M. no. 2094.

*Diagnosis*.—The three slender terminal divisions of the gonopods immediately distinguish this species.

*Description*.—Somewhat more sturdy than *expansa*, a small male being 25 mm long and 5.5 mm wide and the largest specimen, a female, 30 mm long and 7 mm wide, the males obviously less convex than females.

Living color not noted but the alcoholic specimens are light in shade.

Segments 2, 3 and 4 of customary shape. Segments 17, 18 and 19 with posterior angles backwardly produced; those of segment 18 most prominent; those of segment 19 very small and widely separated; posterior angles of these three segments more acute in males than females and moreso than in either *monica* or *expansa*.

Gonopods as shown in Fig. 20. They protrude from an opening extending backward at middle between the coxae of the eighth legs and with the margining rim higher and thinner than in *expansa*, the coxae less widely separated than in that species.

Males with coxae of third legs each with a smaller lower lobe than in *expansa*; sternum between the fourth legs with the two transverse elevations more pronounced than in *expansa*.

HERPETOLOGY.—A new snake of the genus *Oligodon* from Annam. ALAN E. LEVITON, Natural History Museum, Stanford University, Calif. (Communicated by Doris M. Cochran.)

Recently Dr. Doris Cochran, of the United States National Museum, submitted the entire collection of the genus *Oligodon* in the Museum to me for study. She called my attention to one specimen from Indo-China

that she was unable to identify and presumed to represent a new species. Subsequent study has led to the confirmation of Dr. Cochran's suspicions.